Disruptive development

Technology could crack some of the developing world's most persisting educational problems, say advocates. But how far are we from a 'Napster moment', asks **Julian Hall**

In May this year, the Department for International Development (Dfid) trumpeted the imminent arrival of a 'topic guide' that would explore "how ed tech can be used to improve teaching and learning in low and lower-middle income countries". With the Ebola outbreaks and increasing volatility in the Middle East, it was no surprise when the publication did not appear this summer, although it finally surfaced in October.

That's good news for two reasons. While improving education doesn't garner as many headlines as some issues in the developing world, it's arguably as important in the long term, being intrinsically linked to the wellbeing and prosperity of millions around the globe. Furthermore, in Dfid's mind, educational technology could play a key role in tackling some of the systemic problems facing education in poorer countries. In fact, ed tech solutions are already being trialled successfully in Africa, Asia and beyond.

Ed tech obviously covers a broad church, from online learning (such as tutoring via VOiP platforms or assessment apps) to e-textbooks, learning management systems to mobile learning, and increasingly the use of big data to personalise learning, either through 'adaptive learning' or by aiding teacher-pupil instruction. In the developing world, market providers typically include locally-based ventures, NGO-led initiatives and big international education companies.

Henry Warren, director of vocational learning at Pearson says that, if we're being honest, ed tech has had "no discernible effect yet" in poorer countries. However, he qualifies, "that's not to diminish the effect it can have with things like flip-learning and peer-led learning, it's just that we've not had that seismic shift like we had with email in the workplace".

What's more, despite the absence of a so called 'Napster moment' for ed tech, Warren believes it is only a matter of time before it happens. "It's not clear when or what it is going to look like; the fundamental driver is going to be getting a device in the hand of every child. What is being done now is bitty and piecemeal and done by proxy through the hands of teachers, never a great way to initiate change."

The hard road to adoption

It's a fair summation given the numerous barriers to adoption in the classrooms of the developing world (and the developed world for that matter). The disparity between education budgets in developed and developing countries is an obvious starting point. The latter aspires to the didactic learning model of the former, but its expensive to mirror. Expenditure per student in the UK as a percentage of GDP was three times that of India's in 2010, according to the World Bank.

Factor in topography and population (a recent UN study cited India reaching 1.6 billion people by 2100 and sub-Saharan Africa quadrupling to 4 billion); variable unreliable communication networks; and skepticism born of clinging to functional and didactic methods, and the picture is not at first promising.

Kago Kagichiri, co-founder of Kenyan 'virtual tutor' company Eneza Education, cites a number of problems he witnessed both in Kenya and in India. "There is a local negative perception towards schooling. Many teachers find their career as a last resort and don't really consider the students. Because of this, students also don't enjoy school."

Kagichiri believes that the memory-based curriculum and focus simply on passing exams in both countries exacerbate this. And he feels some teachers just see ed tech as something else to add to a 'to-do' list, rather than something that can help them cut admin and bureaucracy. Procurement is another issue, he says, as schools' have little say over how they spend their budgets. "Very little money is managed by the schools themselves. This leaves any 'new' methodologies at the bottom of a very large priority list. In other areas, government and school officials want bribes to roll out the new methods to their students."

It's not just the system that holds back change; there are practical barriers too. Nathaniel Manning of BRCK, a firm that brings wi-fi to rural parts of Africa, notes that schools might have access to a phone or computer, but they cannot get consistent access to the web. "This makes teaching and planning extremely difficult, and often means that [smart] devices just get left in the corner and teachers resort to analogue methods. This also means that the wealth of knowledge and teaching methods stored in the web are not accessible to these students, putting them at a huge disadvantage."

However, despite all these challenges, some see the developing world as fertile ground for change. Pearson's Warren for example believes the next big shift in K12 education (aided by ed tech or otherwise) will come from Africa or South America. "You don't have the same blockages that you have in the UK. Trying to change big behemoth education systems is a staggeringly big challenge, there are so many vested interests and the political cycle changes with each secretary of state as well as with each government."

By contrast, he believes, in the developing world necessity could be the mother of invention. Inevitably that means ed tech has a key role to play. "When you don't have enough money to supply the education system the world is telling you you should have, you start doing other things."

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▶ Initiatives are already underway, including schemes to transfer a whole country's curriculum onto a device, so that lesson planning and tests are much easier to perform. Eneza Education, whose aim is "to make 50 million students in rural Africa smarter through the use of low-cost mobile technology", provides both a web-app and an SMS study tool to this end.

Similarly, the iSchool learning system in Zambia was designed to cover the whole of the Zambian school curriculum. The service comes with training for teachers and is accessible on a range of devices, including a bespoke touch-screen tablet, the ZEDuPad.

Capital ideas

Social impact investors such as the International Finance Corporation and the Pearson Affordable Learning Fund (PALF) also see the potential of ed tech in the developing world, and increasingly back initiatives that enable low cost learning.

PALF's Zaya Labs is one such example. It has developed a blended learning model in India where students divvy up their day with time spent with a tablet device, a teacher and each other for peer-led learning. The model is assisted by the firm's learning management system, LabKit, which allows teachers to monitor performance, set work and plan lessons.

The entire Zaya solution costs $4 (£2.55) per student per month and it is currently used in over 40 classrooms in Mumbai and Bangalore, says Jacob Kestner of PALF. "While initial results have demonstrated learning gains, the team has much higher ambitions that can only be achieved through a data-driven focus. They hope to demonstrate how blended learning can be implemented successfully in every classroom, with an approach that caters to the strengths, experiences and comfort level of teachers."

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Not-for-profits have a significant role in creating viable ed tech solutions, too. English in Action is a collaboration between the UK and Bangladeshi governments. It delivers teacher training through microSD cards on the mobile phones of teachers, and low cost English lessons by phone and through popular TV shows. Commentators say the demand for such initiatives is changing the education landscape in Bangladesh, and creating opportunities for new businesses with a tech focus.

Social enterprise Digital Divide Data trains high school graduates in Cambodia, Laos and Kenya in English and information communication technology. When the students finish their training, they are led towards higher education options via a combination of scholarships, a salary and loans. According to the Centre for Educational Innovations, which promotes various initiatives that support education for the world's poorest, "the skills that DDD graduates gain as a part of the programme allow them to earn roughly four times more than an average citizen in Cambodia or Laos". Based on the success of its programmes in Cambodia and Laos, DDD says it has expanded its operations to Kenya.

Such a vast array of initiatives is naturally attracting a desire to quantify the best practice as the Dfid 'topic guide' initiative signals. Ed tech after all is still evolving, and its proliferation depends on evidence that proves it really works.

For Kester, though, there is no doubt that technology could significantly enhance traditional approaches to solving educational inequality. "Governments, companies and charities working to improve education have typically focused on two out of the following three components: affordability, quality and scale," he says. "When the development aid community talks about improving access to education we see that as a function of affordability and scale."

With the continued rollout of low-cost private education in the developing world, developments in technology such as the plummeting price of mobile phones and of tablets can only help to unite this trinity of aims. How they are implemented will no doubt be subject to debate and interpretation, but perhaps the 'Napster moment' for ed tech is not so far away. ■